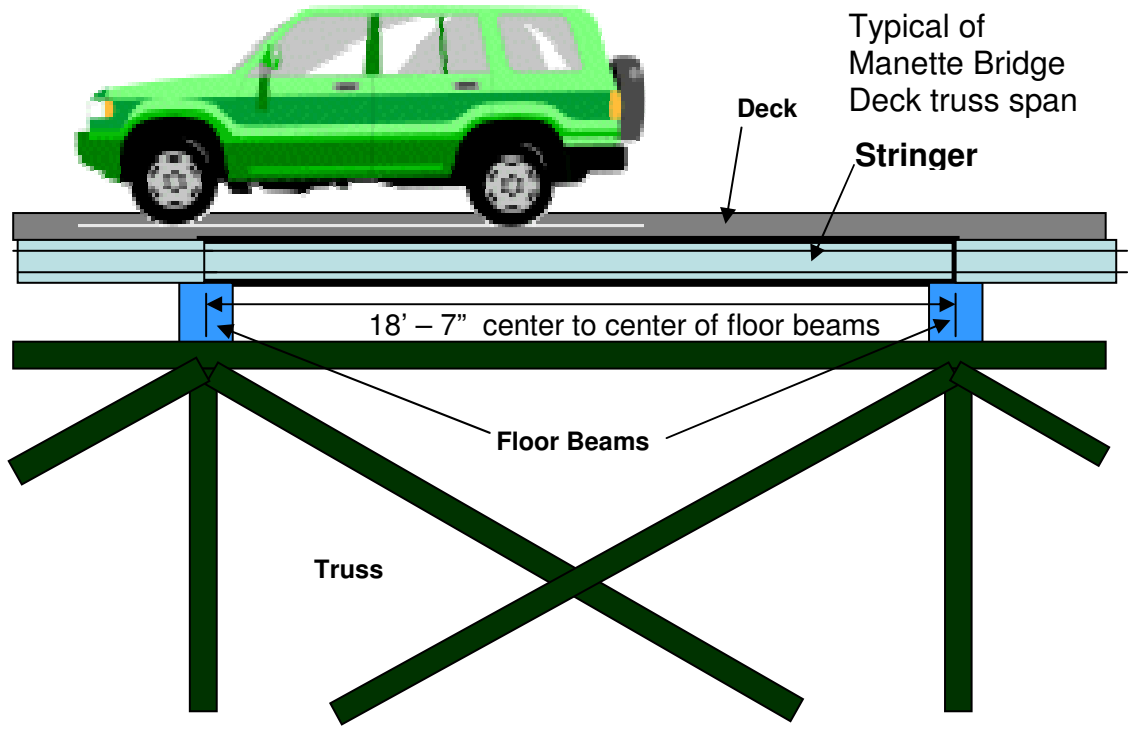
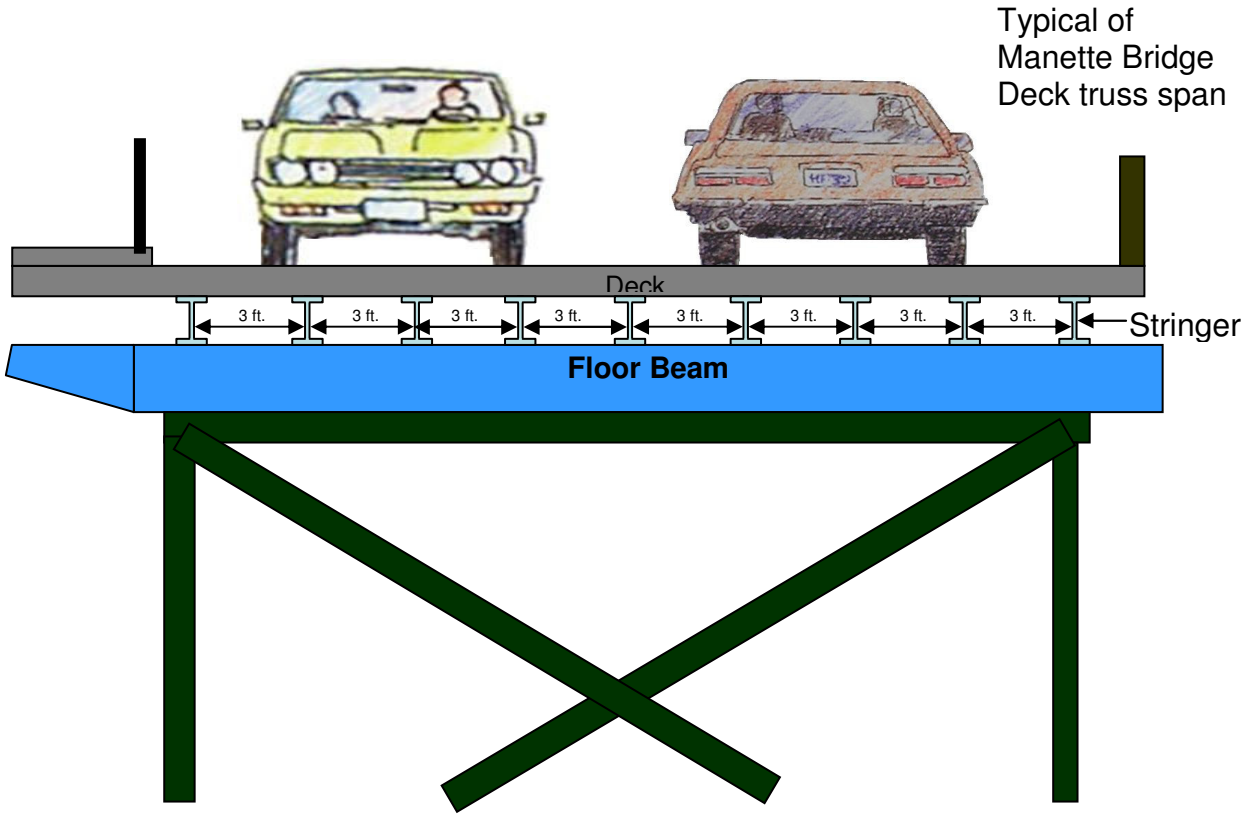
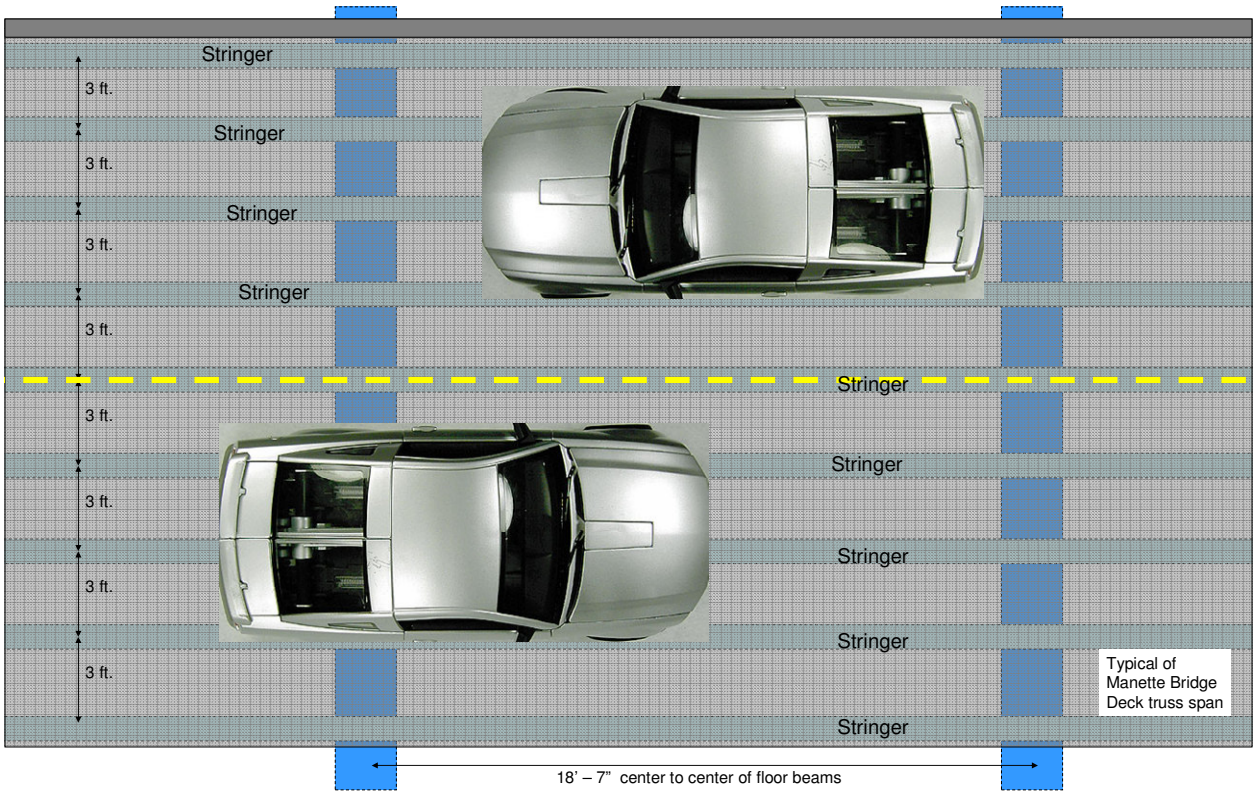
The Manette Bridge – What is the reason for reducing maximum loads?

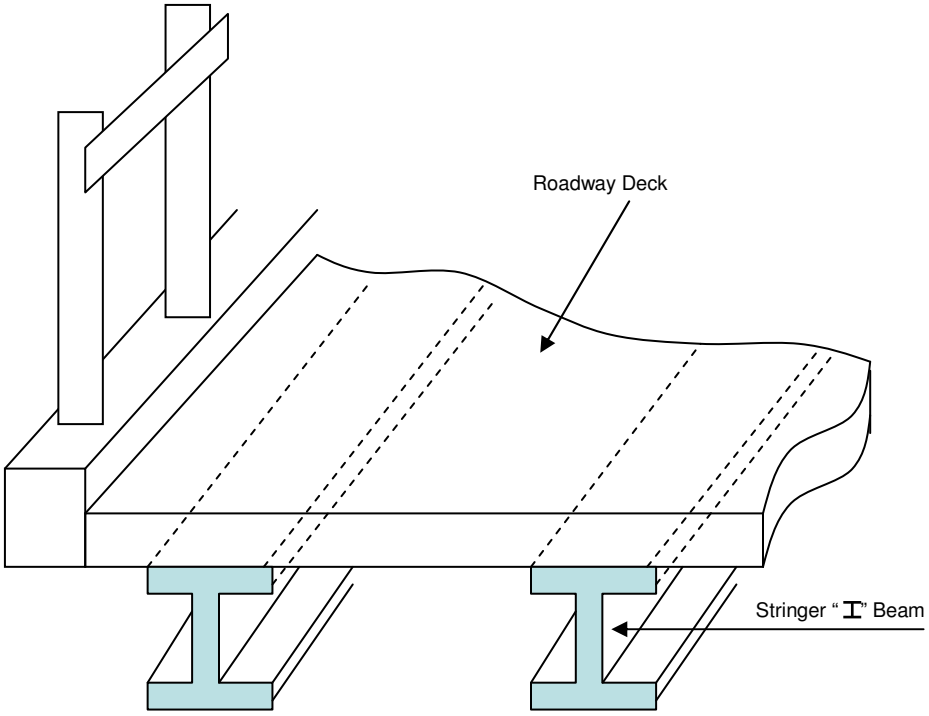
A routine inspection of the Manette Bridge conducted in November 2007 identified an increased amount of rusting on the "stringer" beams that directly support the roadway deck. A stringer is a girder or beam that is in line with the roadway. In the Manette Bridge, the stringers are directly below the concrete roadway deck. They are supported by floorbeams that are perpendicular to the roadway. Stringers are somewhat like floor joists in a building.



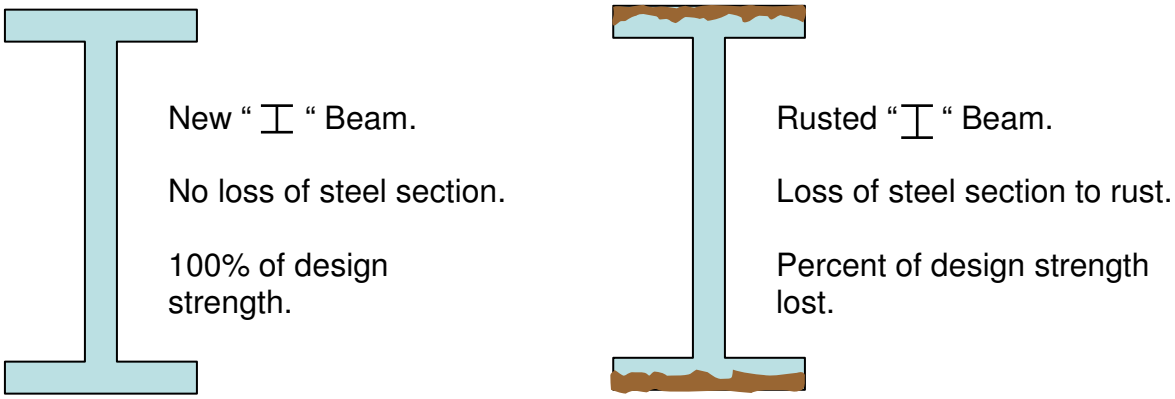




The stringers are steel "I" beams. That is, if you looked at the end of the beam, it's has an "I" shape.



The shape at the end of the beam is described as the "cross section." The cross section, or "section" is measured as an area. The size of this area of steel is key to determining the weight the beam can support. When the beam has developed rust, the extent of this rusting is measured in "section loss." Section loss is the amount of the originally installed steel beam that has lost it's strength and is no longer able to support loads.



All of the stringers in the Manette Bridge have some rust. The top and bottom flanges of a majority of stringers have rust resulting in up to 25% section loss. There are a few stringer top flanges that are rusted with up to about 50% section loss.

Using these inspection findings, structural calculations have been conducted to estimate the current strength of the bridge. This resulted in the decision to reduce the maximum allowable loads on the bridge. Until this point, typical "maximum legal" loads of 105,000 lbs. were allowed across the Manette Bridge.

The reduced weight limits are as follows:

- Vehicles with two axles – maximum allowable weight of 21 tons (42,000 lbs.)
- Vehicles with three axles – maximum allowable weight of 32 tons (64,000 lbs.)
- Vehicles with four or more axles – maximum allowable weigh of 40 tons (80,000 lbs.)

These allowable weights are far above that of ordinary passenger cars or small trucks and thus have no affect on those vehicle types.